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ABSTRACT

A total of 1657 sixth grade pupils in 53 randomly integrated tri-ethnic classes, and their teachers, participated in a 1-year longitudinal study investigating the effects of peer-rated coping and teacher classroom structure on achievement. The subjects were given initial achievement and peer-rated general coping measures and a post achievement measure. The teachers were rated on Ryan's Classroom Observation Record, a measure of teacher classroom behaviors, from four to seven times during the year. Achievement gain for pupils was found to vary strongly with coping skill only for those initially high in achievement. Highly organized teachers could help low initial achievement, high coping students, and disorganized teachers could have a negative effect on low coping, high initial achievement pupils with respect to achievement gain. (Author/BH)

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EFFECTS OF PEER-RATED COPING AND TEACHER STRUCTURE ON ACHIEVEMENT

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EFFECTS OF PEER-RATED COPING &
TEACHER STRUCTURE ON ACHIEVEMENT

Sixteen hundred fifty-seven sixth grade pupils in 53 randomly integrated tri-ethnic classes, and their teachers, participated in a one year longitudinal study. The Ss were given initial achievement and peer-rated general coping measures and a post achievement measure. The teachers were rated on Ryan's Classroom Observation Record from four to seven times during the year. Achievement gain for pupils was found to vary strongly with coping skill only for those initially high in achievement. Highly organized teachers could help low initial achievement, high coping students, and disorganized teachers could hurt low coping, high initial achievement pupils with respect to achievement gain.

EFFECTS OF PEER-RATED COPING AND TEACHER STRUCTURE ON ACHIEVEMENT

The purpose of this paper is to report the effects of peer-rated student competency measures and observer-rated teacher classroom structure on sixth grade student achievement level regressed change, measured over a school year.

It is generally assumed, with some evidence, that the teacher has an effect upon child achievement (Moody, 1968). The organizatior of class time, and adequacy of preparation and presentation by the teacher, in particular, have been shown to have significant effects on student achievement. Wodke & Wallen (1965) and Soar and Soar (1975) found that certain types of controlling behavior by the teacher seems to suppress creative student behavior. Soar and Soar (1978) found that achievement and creativity are negatively associated with freedom of movement, and positively associated with freedom of expression within the classroom. Dunkin and Biddle (1974) concluded that teacher vagueness is associated with achievement loss, while teacher use of explicit logic predicts achievement gain. An intermediate amount of control, as well as a distinction by the teacher as to whether it is pupil behavior, pupil tasks, or pupil thought which is to be controlled, produces relatively more achievement gain (Soar, 1968; Soar & Soar, 1975). A review of fifty studies concludes that the following teacher classroom variables are positively associated with student growth: clarity, variability, enthusiasm, task-oriented or business-like behavior, criticism, teacher indirectness, student opportunity to learn criterion material, use of structuring comments, amd multiple levels of questions or cognitive discourse (Rosenshine and Furst, 1973).

The skills and personality characteristics of the child also influence achievement gain. Coping skills, defined as an adaptive capacity, include the ability of a person to achieve a goal or set of goals in a broadly varying environment (Fullen and Loubser, 1972). Weyl (1972) lists five behavior dimensions describing classroom coping: striking out at others, denials of avoidance, determination of cause or blame, rehearsal of possible solutions, and seeking help, support, or information. Peck (1967) developed a problem-solving paradigm: 1) confrontation, 2) reflection, 3) active exploration of possible solutions, 4) objectivity, 5) cooperation with others and 6) persistence.

Ideally, coping skills should facilitate the student's classroom performance. The question arises, however, whether students with different coping levels do better under different teaching styles. Students with poorly developed coping abilities should be less likely to benefit from a classroom setting where information was available but not well presented (i.e., a non-structured presentation), while students with well-developed coping skills should not be too disadvantaged by a situation in which they were required to do their own structuring.

Methods

The Teaching-Learning Interaction Study (TLIS) was developed to explore the effects of the interaction of teaching styles and student characteristics in a large scale sample of 53 classes containing 1657 sixth grade children in randomly integrated, tri-ethnic (Anglo, Black, and Chicano) sixth grade learning centers in Austin, Texas. The sample of 70% Euro-Americans, 15% Black, and 15% Chicano is reflective

of the city. The children were tested at the beginning of the 1974-75 school year for achievement, self-esteem, peer-rated and self-rated coping skills, attitude toward school, and attitude toward the teacher. At the end of the year, the students were tested on the same instruments, except for the peer-rated coping skills. During the year, observers rated each classroom teacher on five to seven occasions. The teachers observed had the children for a two-hour social studies class each day, in addition to a homeroom period.

Instruments

The Behavior Rating Scale (BRS) was developed by Peck (1972), and modified for this study as a peer-rated measure of coping skills. Each child is rated by 10 peers in the same class on 11 semantic differential type items, and is given an overall rating (Haak & Peck, 1972). An internal consistency rating of .95 on the item means was obtained.

The teacher class behaviors were rated on the Classroom Observation Record, a twenty-item teacher rating instrument adopted from Ryans(1960), which consists of three scales: Kindly-understanding (KU), alpha reliability = .98, Systematic-organized (SO), alpha reliability = .98, and Stimulating-inventive (SI), alpha reliability = .97. Each class was rated on from three to seven separate occasions by trained observers: the twenty items rated for 20 teachers on two occasions by 4 raters produced a mean intraclass reliability coefficient of .87. The items comprising the Systematic-organized factor, which will be the only teacher measure in this study, were: Alert-apathetic; Responsible-evading; Steady-erratic; Poised-excitable; Confident-uncertain, and Systematic-disorganized.

The scales used to measure achievement were the Language Arts or Social Studies sections of the Comprehensive Tests of Basic Skills (CTBS), depending on the student's class, a widely used standard achievement test with a reported internal consistency for the two Language Arts sections of .82 and .99 for Form S, Level 2 (pretest) and .76 and .87 for Form S, Level 3 (posttest). The Social Studies scales are similar.

Results

The measures involved, Behavior Rating Scale-Other Rated (BRS-OR), Comprehensive Test of Basic Skills (CTBS), and Classroom Observation Record: Systematic-organized (SO), covered a range of scores; they were treated as continuous variables.

Pretests

The correlations between 1) the teacher characteristics, COR-SO and 2) the CTBS pretests and BRS-OR, scores were insignificant ($df = 52$). The BRS-OR, CTBS pre correlation was .26 ($p < .01$, $df = 1138$). Thus, the assignment of students to teachers appears to have been truly random.

Posttests

The starting model for the main effect prediction was

(1) $$Y = aU + X + X^2 + P + P^2 + XP + XP^2$$

where X = pretest (CTBS)
P = predictor
Y = criterion (CTBS post)

Missing cases were dropped from this analysis. Generally, the X^2 term was dropped, leaving

(2) $Y = aU + bX + cP + dP^2 + eXP + fXP^2$ as the starting model.

For all comparisons, the pretest term 'X' was left in the restricted model. Thus, any influence of the predictor variable 'P' on the achievement criterion 'Y', the posttest, had the covariance of the pretest partialled out. The result is that the predicted change on the posttest is controlled for pretest level differences. Because the number of Ss in the study was so large, a very small amount of predicted variance could be highly significant. Because of this, and because of the large numbers of tests which were performed in the study, a result was chosen as significant only if it reached $p < .01$. If the predictor terms did not include the pretest, the amount of variance explained was modified by the term $1/(1-R^2_{x.y})$, so as to report only the posttest variance not accounted for by the pre-post test correlation ($r = .74$).

COR-SO did not meet the $p < .01$ criterion while BRS-OR did (F (1,1179) = 33.25, $p < .001$, % V = 2.7), in the positive direction.

The primary focus of the study was whether a significant pupil by teacher interaction effect could be found to predict the CTBS post change. COR-SO and BRS-OR did not interact directly, but several interacting effects were found. There was a significant CTBS pretest by BRS-OR linear effect in predicting CTBS post (F (1,1181) = 32.45, $p < .001$. % V = 1.2. For low CTBS pre (1 standard deviation below the mean), there seemed to be no relationship between the BRS-OR and CTBS post change; at the mean CTBS pretest score there was a small positive relationship, and

at high CTBS pre (1 standard deviation above the mean), the relationship was stronger. The results seemed to show that the peer-rated coping measure was only influential in predicting post CTBS differences when there was a high initial CTBS score. It should be noted that the pretest quadratic term (X^2) was not included in the model. Subsequent analysis showed that there was sufficient shared variance between the two to drastically reduce the CTBS pre by BRS-OR effect.

The relationship with the teaching style was even more complex. A three-way interaction between CTBS pre, BRS-OR, and COR-SO was found ($\underline{F}(4,1141) = 3.5$, $\underline{p} < .01$, % V (uncorrected) = .51. The terms included the quadratic components of both the COR-SO and BRS-OR. The starting model was

$$(3) \qquad Y = aU + bX + cP + dT + eP^2 + fT^2 + gPT + fPT^2 + gP^2T + hP^2T^2 + iXP + jXT + kXPT + lXPT^2 + mXP^2T + nXP^2T^2 + E$$

where X = pretest CTBS
P = BRS-OR
T = COR-SO
Y = Criterion (posttest CTBS)

The least squares solution indicated that for those starting with a low CTBS score, a highly Systematic-organized teacher made a difference only with high BRS-OR pupils. For those starting with a CTBS pre-score near the mean, high COR-SO teachers were somewhat better for high BRS-OR students than medium or low COR-SO teachers and low COR-SO teachers were somewhat disadvantageous for students with a low BRS-OR score. For students with a high CTBS pretest score, the only real difference between teaching styles was that for those students with a low BRS-OR, a low COR-SO style seemed to have a quite disadvantageous effect.

Discussion

The results suggest a more complex model is necessary to describe the effects of classroom structure on achievement. Not only is the general coping skill of the student, as measured by the BRS-OR, important, but, also, the specific skills inherent in academic subjects must be taken into account when assessing those structure effects. A good general coping strategy will allow students with a high level of skill to take advantage of almost any class situation. However, for those students lacking important basic academic skills, a structured class and a well prepared teacher is the best hope for gaining skills, but they must have a good general coping strategy to take advantage of the situation. The structure, however, refers to the conduct of the class presentation and the keeping of order rather than the suppression of expression (Soar & Soar, 1978). Students with a high degree of the prerequisite skills, but a poor general coping ability tend to derive relatively less benefit from a non-structured class as compared to a more structured class. The effect of the teacher's degree of organization is especially interesting in light of the BRS-OR by CTBS pretest interaction findings, which imply that general coping skills are highly beneficial in promoting further skill mastery if a student possesses the requisite academic skills, but are relatively ineffectual in promoting learning, by themselves, for students at lower initial skill levels. A high BRS, low CTBS pre student apparently can be helped by a well-organized teacher, whereas a low BRS, high CTBS student can be hurt by an unsystematic teacher. For students with low starting skills, who also have low general coping skill, on the other hand, teaching does not seem to make much of a difference.

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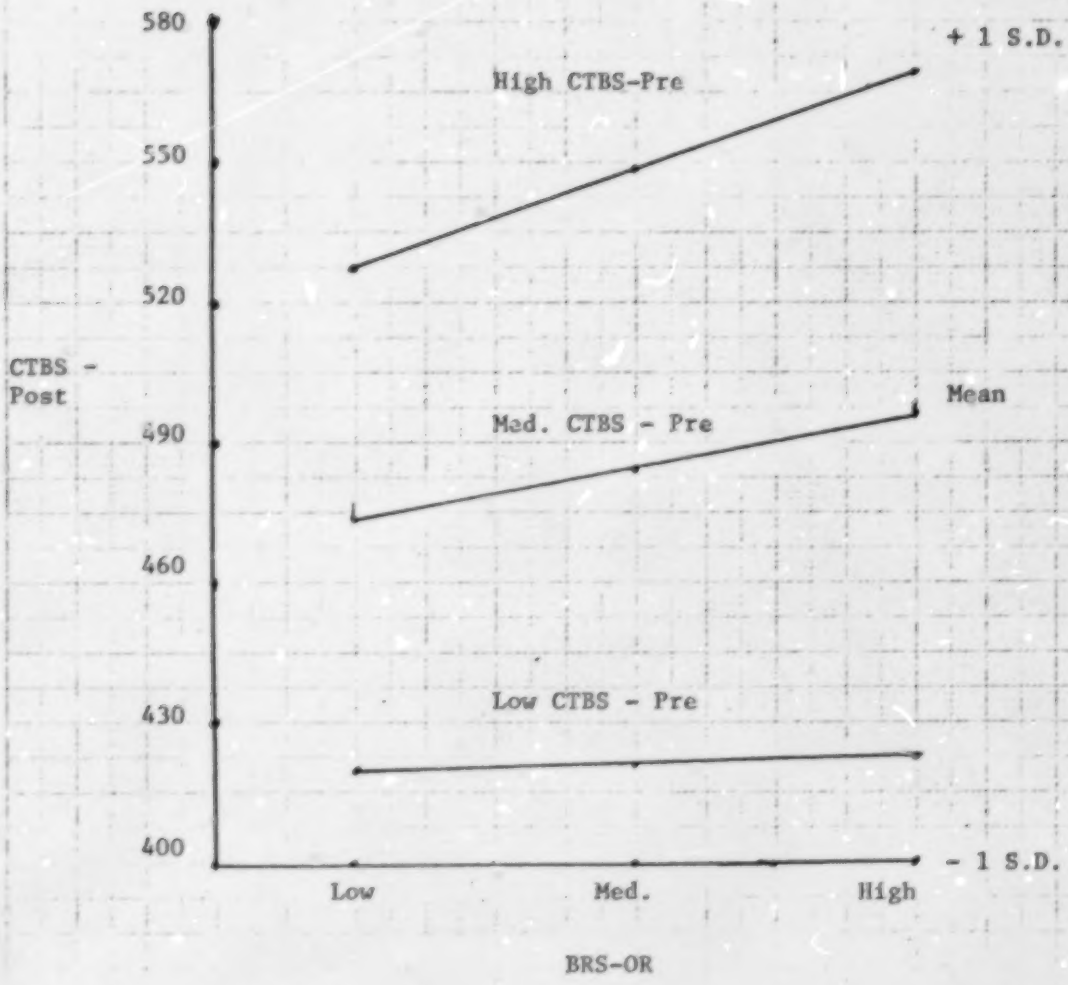
Austin, Year 1 Sample

CTBS Posttest Scores Predicted

By CTBS Pretest and BRS-OR



Austin, Year 1 Sample

CTBS Post Scores Predicted by

CTBS Pre, BRS-OR, and COR-SO